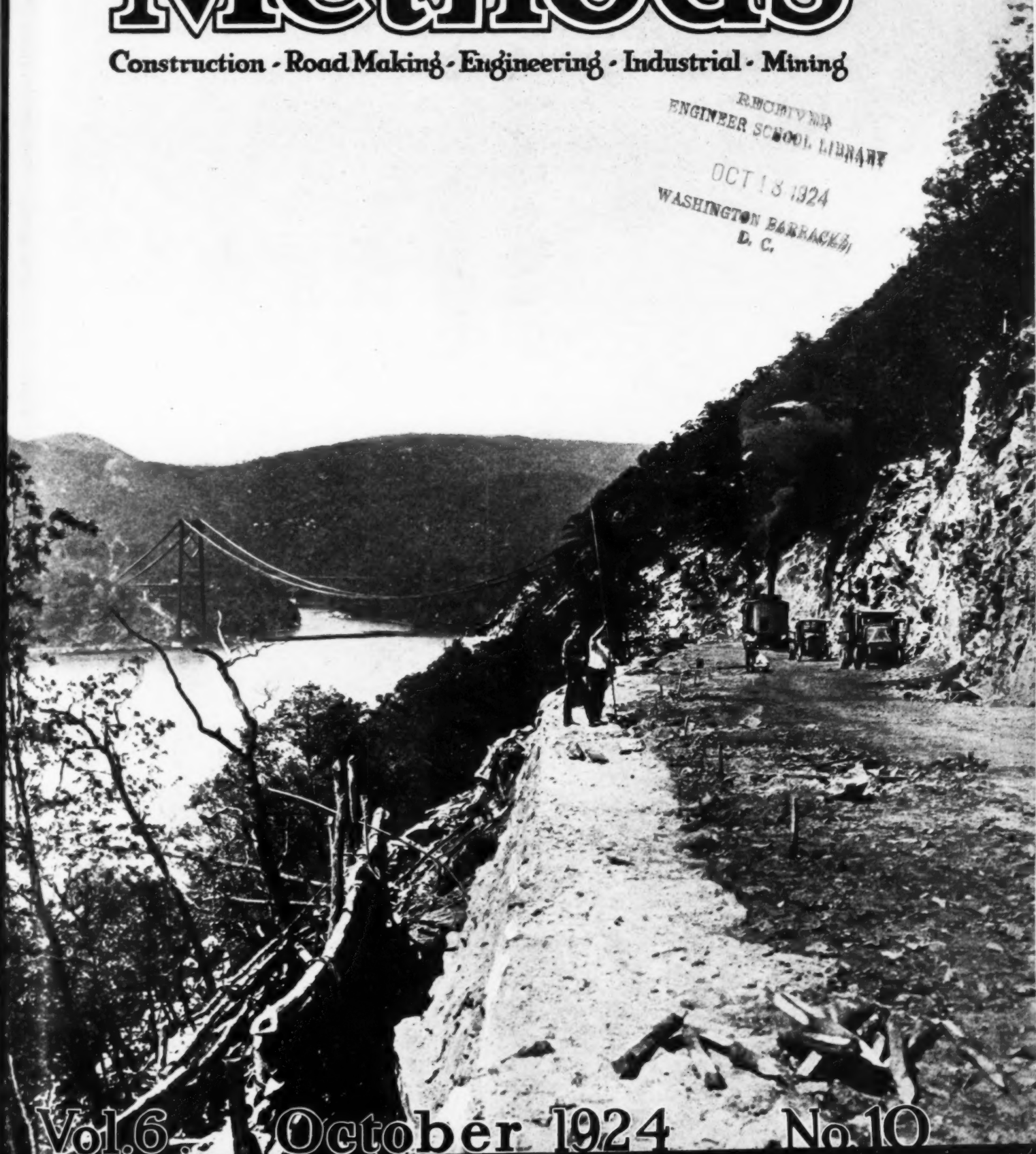


Successful Methods

Construction - Road Making - Engineering - Industrial - Mining

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Vol. 6 - October 1924 No. 10



Thews On Another Big Job

On August fifteenth, while banners waved and bands played, a large crowd watched Borough President Reigelmann of Brooklyn, officially break ground for the huge new Brooklyn Municipal Building. But, instead of the usual hand shovel, used in such ceremonies, he wielded a Thew Type A-1 Steam Shovel.

The excavation for this mammoth structure will be 40 feet below street level. Over 80,000 cubic yards will be removed.

It is significant that Thew Shovels are

usually found where big projects are under way. The reason is plain. Big contractors don't select shovels by guess or snap judgment. They demand performance and must have it. That accounts for their success. The Geo. J. Atwell Company, contractors on this job, are among the biggest and most successful in New York. They own four Thews. We don't have to tell you why.

If you want to know the reason for Thew superiority send for the new Thew Steam Bulletin. You'll find it interesting.

THE THEW SHOVEL COMPANY, LORAIN, OHIO



Successful Methods

A Magazine of Construction Service

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Vol. 6

OCTOBER, 1924

No. 10

Bonding the Irresponsible

PROBABLY the worst evil in the public works contracting field today is the fact that bonds can be obtained from reliable insurance companies by practically anyone who is low bidder. On the face of it, the prices bid and their relation to the engineer's estimate seem to be given little consideration. Nor does a lack of experience in doing the work involved appear to count much. Insufficient capital likewise is not a bar. The main qualification for obtaining a bond is apparently to be the low bidder.

This sums up the case against the bonding companies, as it is generally stated by every one concerned except the representatives of those companies. There certainly is much need for greater care on the part of the bonding companies in selling bonds to contractors with whom they have had no experience or who have previously failed.

It is all very easy to put the blame on the bonding companies. The fact is, however, that very few public officials ever refuse to award a contract to a low bidder, if he can get a bond. There are exceptions, but the courage they display is all the more noteworthy on account of its rare appearance. In other words, the public official decides that the bonding company will make good, if the lowest bidder fails. And in a sadly increasing number of cases the bonding company does have to make good.

Without having heard the bonding companies' side of the story, it goes without saying that some of them must be well fed up on this class of business. It is a question, however, whether they single-handed can work out a policy that will help much. Certainly it would be better for all concerned if public officials, contractors, organizations and the bonding companies would join hands to meet the situation.

A few feeble efforts have been made to get all who are affected to cooperate on a solution of the problem, but chiefly there has been only talk. And most of this has come from the public officials and the contractors. It is time for public officials to realize that the bonding companies need their help in reducing the number of contracts awarded to irresponsible bidders.

Laying Up for the Winter

MORE outdoor construction work will be carried on this winter in proportion to the total under way than ever before. But a large percentage of jobs will soon be shut down in the cold weather States. Surprisingly little of the equipment that will

then be laid up outdoors will be protected properly against the weather. Then next spring, when the job starts up again there will be trouble and expense that could have been avoided easily at little cost this fall.

It is the same old story. Regardless of experience and of all the preaching that has been done, most construction men fail to give their equipment left in the field in the fall the protection it must have.

Boxing up the cab of a shovel and putting a lot of grease on the exposed parts of the mechanism is not enough. Water must be drained out wherever it has collected. All surfaces, inside and out, should be carefully slushed with any of the numerous good mixtures for the purpose. In other words, the machine should really be gone over thoroughly and all of it protected against damage from the weather.

In the same way, all machines that it appears impracticable to put under cover should be given real thought by some one who knows how to think about this kind of a job. Laying up machines in the open is a job that may safely be delegated to few foremen, and ought never to be left to a gang of laborers. Nobody but the boss is sure to do the job as it should be done. And when spring comes we shall find that few bosses did a good enough job.

The Outlook

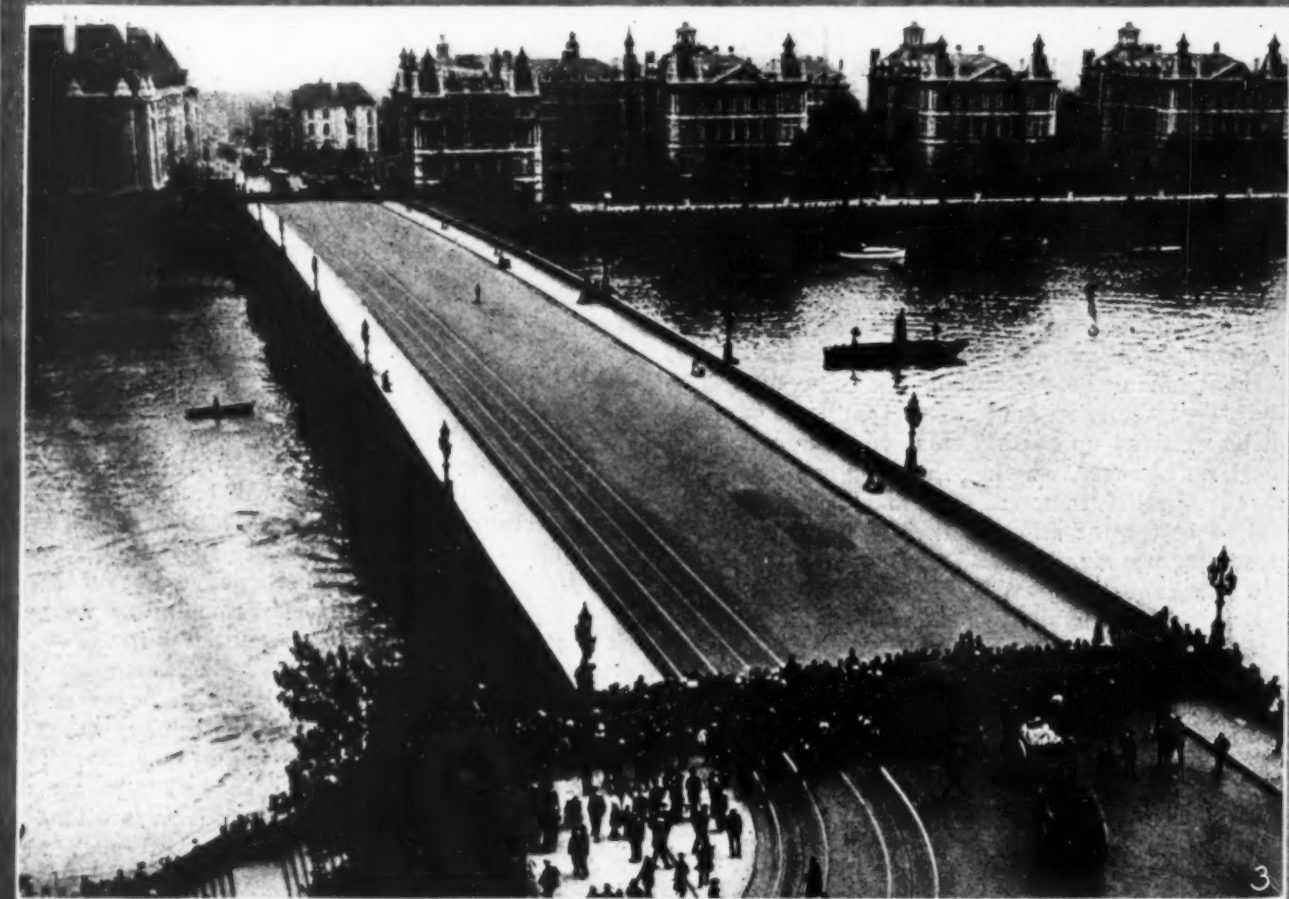
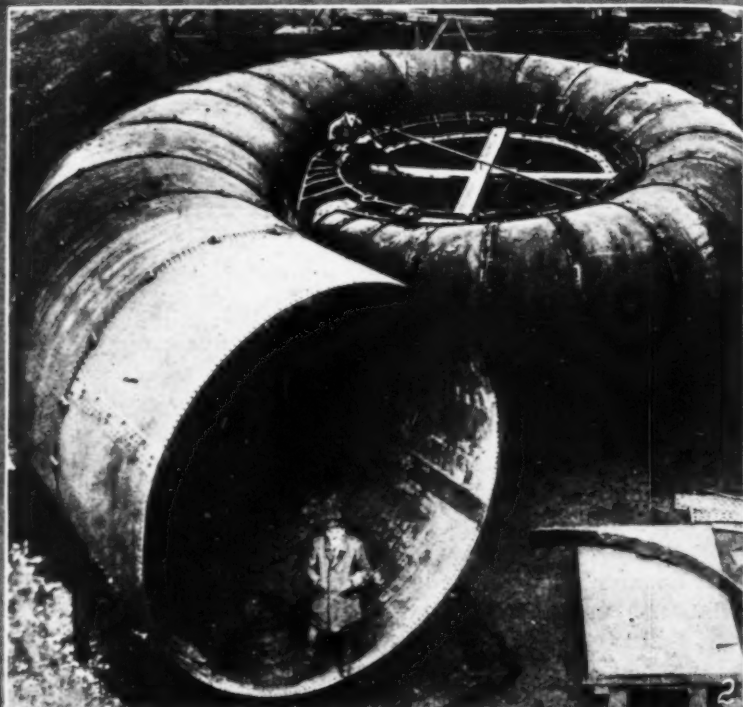
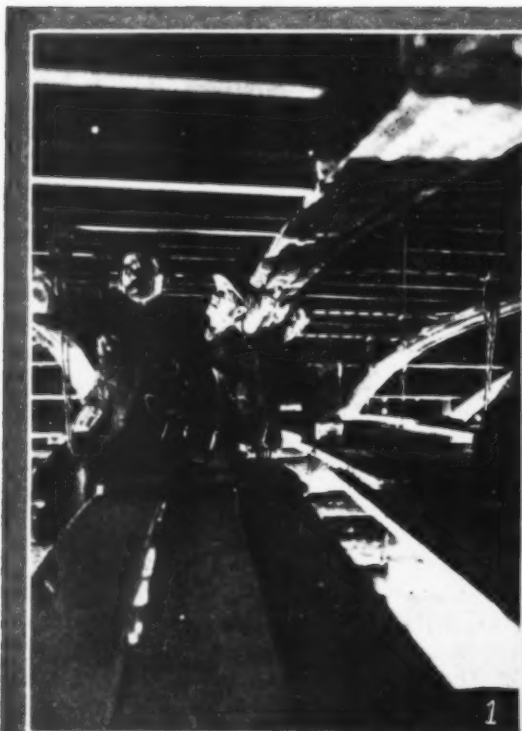
ABOUT the middle of the summer, when general business was mighty slow, the opinion was ventured in these columns that there would be a decided change for the better. That change has since occurred. Now another opinion will be offered with the risk of error that all prophecies face.

All signs indicate that we are in for a period of inflation of prices. Whether the volume of actual business will increase greatly remains to be seen. But unless there is an unforeseen break in the set-up, prices are bound to go up.

The basic reason to expect higher prices is a greater volume of idle money than ever before known. Time loans are being made in the big money markets at rates so low as to appear untrue. And there are vast sums in the hands of bankers and corporations for which no market can be found.

After a general slowing up in business such as the country went through in the spring and summer, an accumulation of funds is to be expected. But the present vast volume of idle money cannot be explained away by that reason. It is largely due to our immense national stock of gold.

Water Means Work



1. Workmen inspecting the inside of Westminster Bridge, London. © P & A Photos.
2. Section of a giant water turbine being installed in the Isar River, Germany, as part of a new water power development. © International.
3. Westminster bridge undergoing a traffic test. The bridge was cleared for a few moments while delicate instruments noted the effect of the sudden cessation and resumption of traffic. © P & A Photos.

In Construction Field



4. Moving a school 17 miles by water near Seattle. © P & A Photos.

5. Pulling in the latest Atlantic cable. Even an empty barrel has its uses in some kinds of construction. © International.

6. Looking down on one of the units of San Francisco's Hetch Hetchy project. A siphon is being built at this point under the Tuolumne River. © International.

EUROPE'S BIGGEST APARTMENT HOUSE

Gigantic Structure Is Being Built in Brussels—Materials Left by Germans Used for Aggregates

By L. A. NUTTER

THE housing problem, or what, in Europe is known as the "crise de logements," has been universally felt since the war, and has had many and varied solutions proposed, but most of the so-called solutions have died in the hatching stage. Generally the projects have been for homes for the "poor" working man and invariably included a garage for his Ford, while the "poor" rich man has had a hard time finding stable room for his Rolls Royce.

It remained for M. Lucien Kaisin, the active head of the Credit General Hypothecaire et Mobilier of Brussels, to have an idea, and due to his usual forcefulness and the unlimited confidence his enthusiasm inspired a series of palace apartments, which can truly be classed as ultra modern are now being completed at Brussels in Belgium.

The location which had been acquired by Mr.

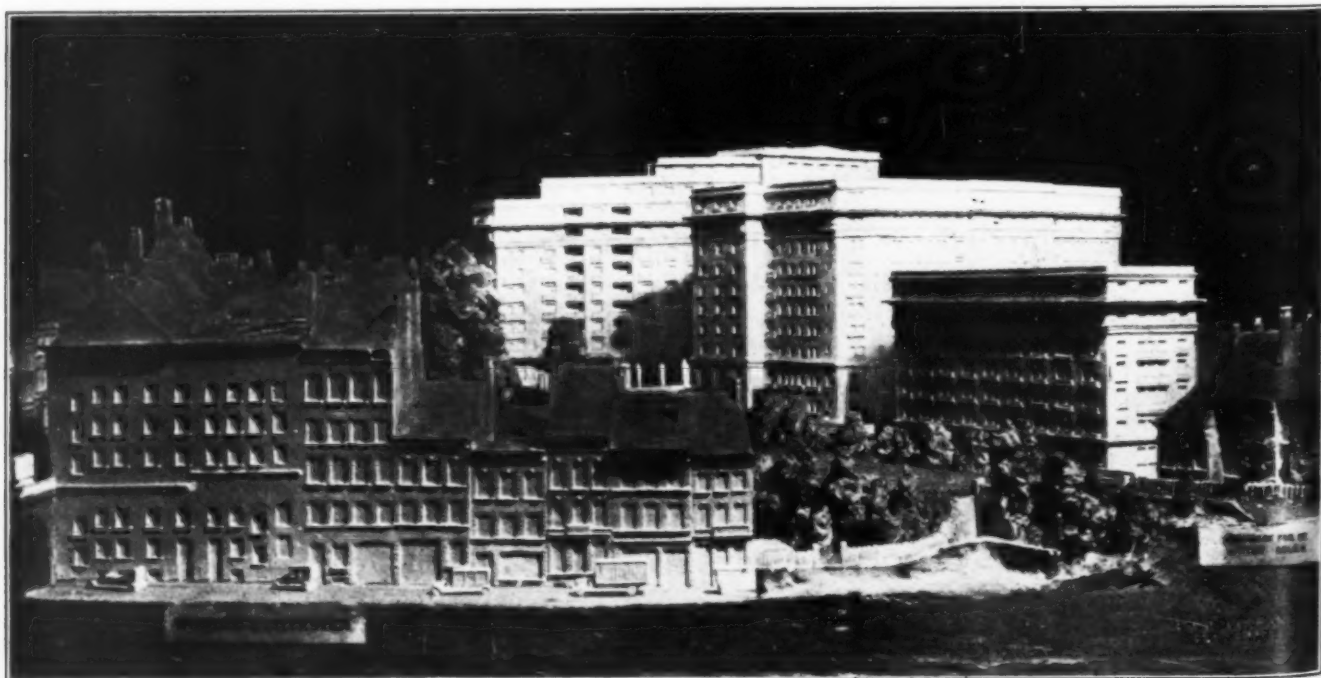


STEEL TOWER AND CHUTING PLANT AT WORK

Kaisin and on which his dream was to be realized would have brought heart failure to almost any architect and a contractor would have had a nightmare if by any misfortune he had been awarded the job. Railroad tracks, coal yards, tenement shacks and delapidated buildings made a strange atmosphere in which to instruct Mr. Pollak, the architect to create palace apartments, and quicksand, underground creeks and unusual differences in street elevations did not give a contractor much opportunity to dream of profits.

The main entrance to the Palace Apartments is from the Rue de la Loi, one of the most important residence streets of Brussels. To provide the hand-

some parked entrances to the new apartments two reasonably good three-story residences were demolished and the railway tracks were bridged over.



THIS PHOTOGRAPH OF A PLASTER MODEL OF THE APARTMENTS GIVES ONLY A SIDE VIEW OF THE MAIN BUILDING. THE STRUCTURE ON THE RIGHT WILL CONTAIN THE BACHELOR APARTMENTS

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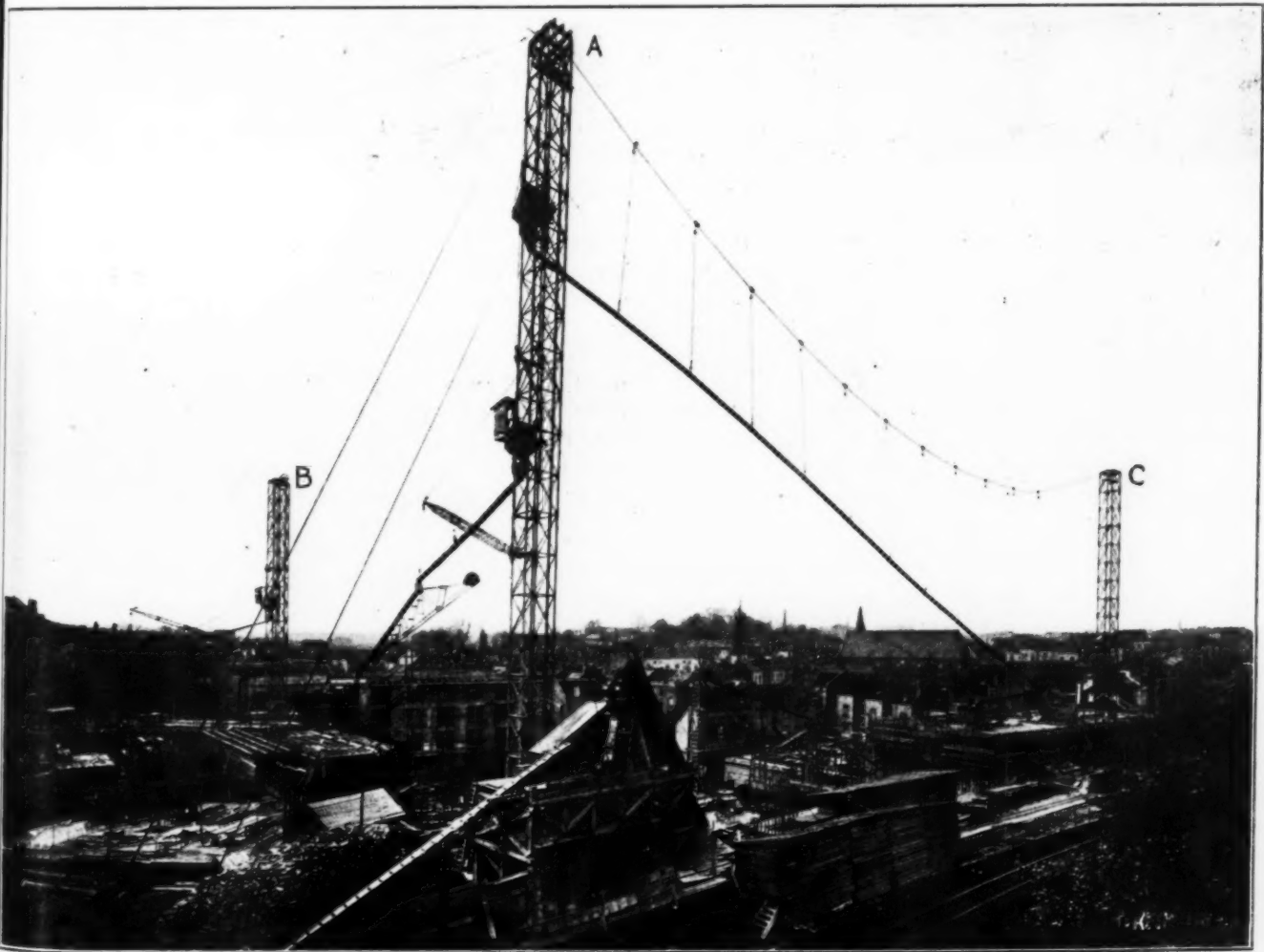
The remarkable engineering solutions and architectural developments of Mr. Kaisin's plans are the work of Michel Pollak a Brussels architect, a graduate engineer of the Zurich Polytechnique and a former pupil of the Ecole des Beaux Arts of Paris. Many examples of Mr. Pollak's skill can be found in the numerous hotels at Montreux and elsewhere in Switzerland and he has had associated with him on this enterprise two distinguished collaborators, Mr. Sarrasin, a graduate engineer from the Zurich Polytechnique and Mr. Hoch a well known architect with a diploma from the French Government so that the best engineering and architectural skill was made available for this important undertaking.

When finished, the group of buildings will contain one hundred and eighty apartments de luxe entirely modern to the last detail. Among the facilities are central heating, hot and cold water throughout, high-speed passenger elevators, large freight elevators, central kitchen and domestic service for those who cannot otherwise solve the servant question. A large central salon is at the disposition of the tenants for balls, "thés dansants" and receptions, and several tennis courts have been arranged on the roof of the four-story garage. A swimming pool and a gymnasium with a school of physical culture make these apartments ultra modern.

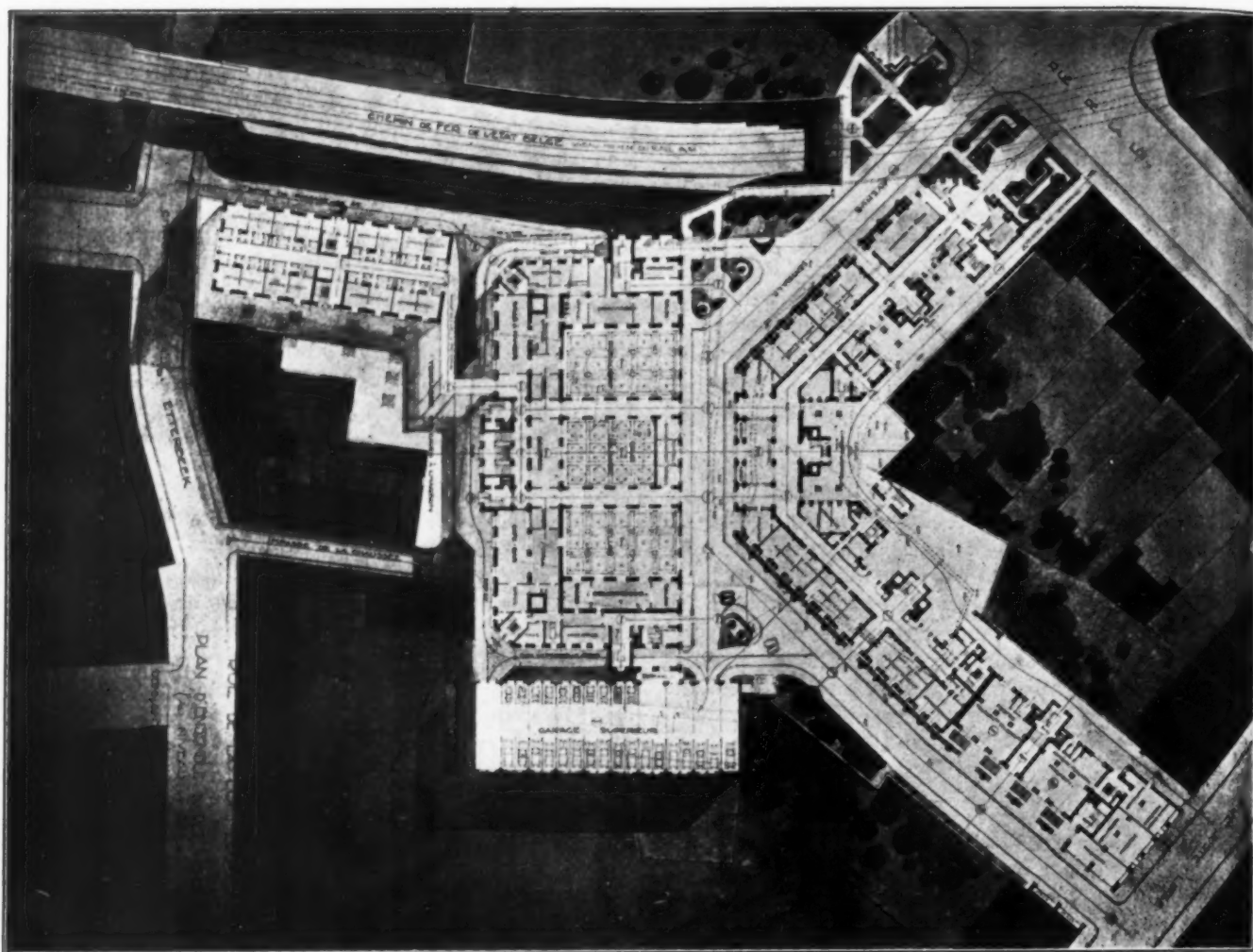
During the war and the German occupancy of Belgium, the Germans had placed a large supply of gravel in storage near Namur covering up a respectable part of a good farm. The contractors were able to obtain this material, but a thorough washing and screening was necessary to make it acceptable for the concrete required in these apartments. As an output of 300 yd. a day was necessary a 1 yd. slack line excavator was provided. At the top of the storage bins the oversize was taken out by a grizzly and the material washed and screened with conical screens.

Train service could be obtained only once a day, so the storage bins were built for a capacity of 300 cu. yd. The bins discharged to standard railway cars which were hauled by the Belgium State Railways a distance of 90 kilometers to the job.

The plan shows the location of the railway tracks at the job between the Chaussee d'Etterbeek and the rue de la Loi, the tracks are on an 18 ft. fill for a distance of about 300 ft. By the addition of a timber bulkhead at the toe of this fill an ideal tunnel storage was provided for sand and cinders as well as the different classifications of gravel. Under the bulkhead of 300 ft. a permanent belt conveyor was installed to which the material was fed through tunnel traps. A central mixing plant with storage



THE THREE TOWERS USED IN THE DISTRIBUTION OF THE CONCRETE. THE GRAVEL HANDLING AND STORAGE PLANT IS BESIDE THE RAILWAY TRACKS IN THE FOREGROUND



A PLAN OF THE GIGANTIC APARTMENT

bins was located in the park A on the plan, the material being elevated to the bins by an elevator 75 ft. in length, this length being necessary on account of elevation of the ground at this point being 18 ft. higher than the ground elevation for the central apartments.

The cement was unloaded from cars to a hopper and elevated to a special cement bin by a small bucket elevator. A worm conveyor fed the cement to an automatic cement weighing machine and a 28s mixer complete the central mixing plant. A 200-ft. steel tower with a boom counterweight plant was located at the

mixer. In addition to pouring the concrete within an area of 150 ft. the plant was arranged to be swung over to a supported line of chuting carrying the concrete to the rehoist tower "B" and also to a supported line of chuting serving a part of the central apartment. An anchor tower 200 ft. high was located at point marked C and a continuous line fed from a separate hopper took care of the concreting of the bachelor apartments at C. Floor hoppers and concrete carts handled the concrete to the forms and 407 cu. yd. of concrete have been handled in 8 hr. The apartments will be ready for occupancy in September, 1925.

OHIO WARNS MOTORISTS BY SHAPE OF HIGHWAY SIGNS

THE shape of the signs placed along Ohio's roads by the State Highway Department indicates what is ahead. A diamond shaped sign means actual dangers, such as a sharp curve, a dangerous hill, a narrow bridge or other condition that calls for slow driving. A square sign indicates cross roads, side roads or school zones, warning the driver to proceed cautiously. The octagonal sign means "Stop," and the railroad sign is round.

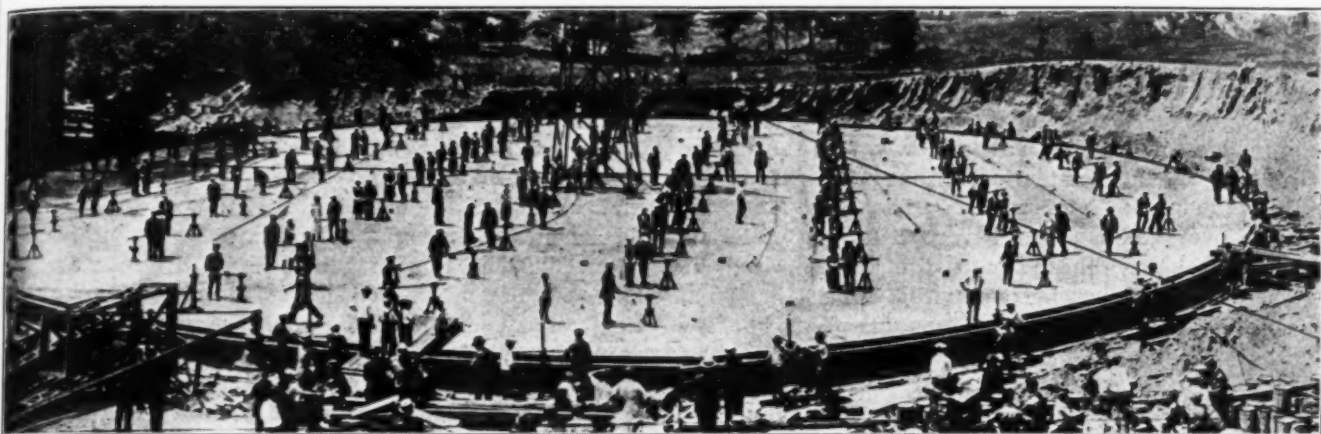
The diamond and square signs are 2 ft. square and the others are about the same size. The shape of these

signs can be observed long before the motorist is close enough to read the wording on them, and the department feels that when motorists become familiar with this system, they will be a big factor in increasing the safety of the highways.

Of course the signs also are plainly marked in as large letters as possible. For night travel the different shapes will have a distinct advantage, as they will tell their story the moment they come within range of a car's headlights, thus enabling the motorist to slow up or to stop as the occasion requires.

PUTTING THE WOMEN TO WORK

Bright Idea Strikes East and West Coast Almost Simultaneously

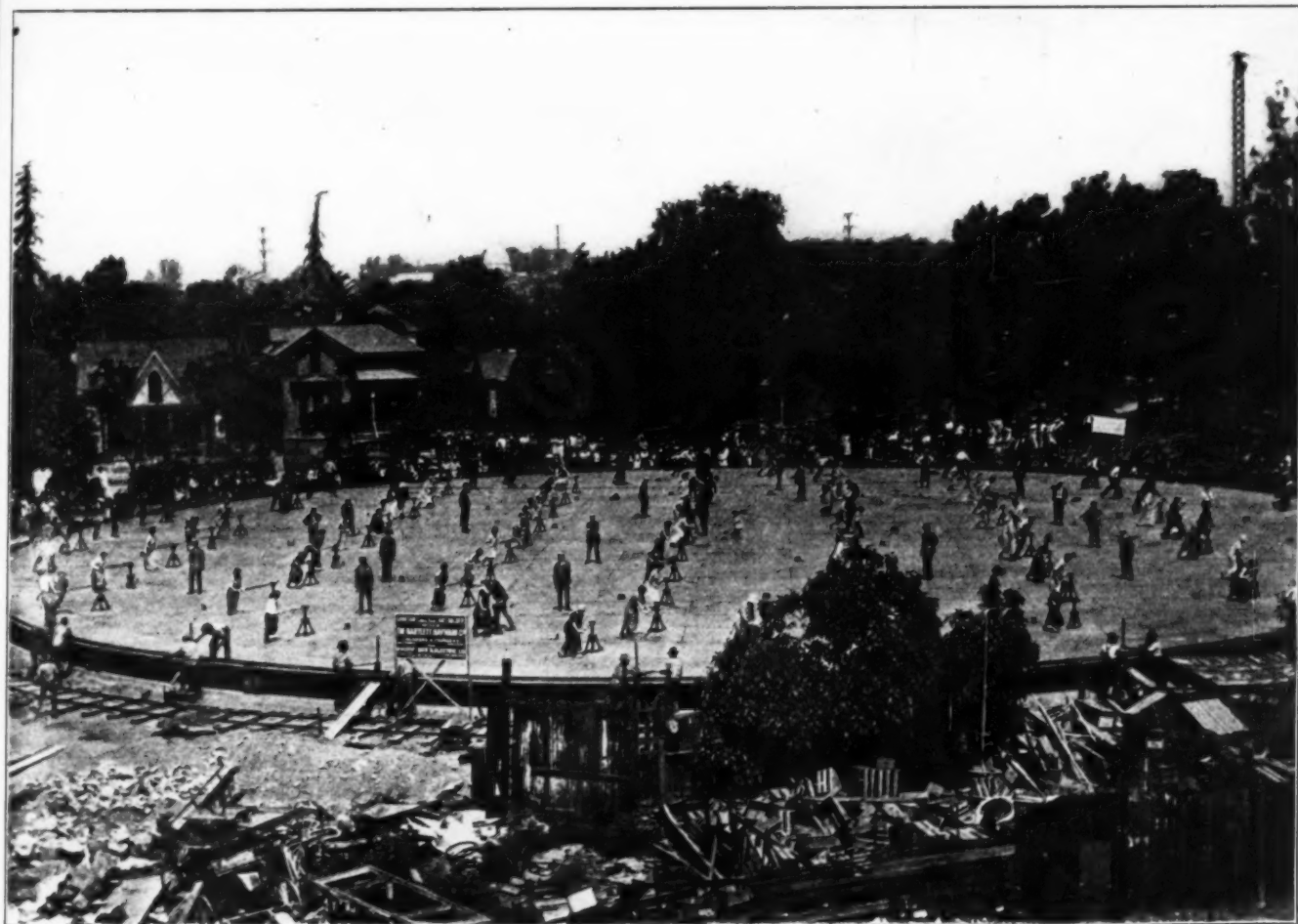


© P. & A.

JUST about a year ago the experiment was tried of jacking the bottom of a big gas tank into place by getting a large number of men to work in unison, and many of the technical magazines printed the photographs of the job. This idea now has been elaborated on by bringing the so-called weaker sex into the picture.

It so happens that the scheme of putting the women to work was tried out just about the same time at points about 3000 miles apart. The upper photograph

on this page shows a job at Bay Ridge, Brooklyn, N. Y., where the men and women employees led by a brass band worked together. The exact character of the music played is not stated. The lower photograph was taken in San Jose, Cal., where 85 young women undertook the work. A close inspection of this photograph reveals the fact that some of these young women received help from male companions, but most of them seem to be going it alone. And they seem to be getting on pretty well at that.



© P. & A.

REVIVING THE TOLL GATE

In its New Form, of Which Bear Mountain Bridge Is an Example, It Will Be Welcomed—Will Go to State Free of Charge in Thirty Years

JUST as the toll bridge and the toll road seemed about to disappear from the face of the earth they have been revived, but not under the old conditions. One of the most conspicuous examples of highway and bridge construction now under way in the United States is nearing completion, although work was begun only eighteen months ago. The Bear Mountain Bridge over the Hudson River with its 3-mile approach is being built by private capital, and all traffic passing over it must pay toll. Up to that point it looks as though the old objectionable plan of having public thoroughfares controlled by private interests was coming to the fore again, but that is not the case. Toll will be charged on the Bear Mountain Bridge for only thirty years and then the entire structure with its approaches will revert to the State of New York without charge. This means that it has been possible to finance and construct this \$5,000,000 enterprise at a much earlier period than would have been possible if it had been left for the state to do. The toll charged will not be excessive and the bridge

will at once provide a new and convenient means of access to the great Interstate Park, which thus far has not been used as much as it should have been.

This article will deal mainly with the road 16,500 ft. in length, which has been built from a short distance north of Peekskill to the east end of the bridge and which for a considerable portion of the distance has been cut through solid rock on a mountain side much like the famous Storm King Highway, a few miles farther up the Hudson. This road is now practically finished, the contractors, Terry & Tench Company of New York City, expecting to complete it this month.

The highway begins midway between the state camp on the east side of the river near Peekskill and Roa Hook. From there it goes along the mountain-side above the main line of the New York Central Railroad over the state land and back into the valley of Brockey Falls. Then it comes out 410 ft. above the river at a point about three-quarters of a mile south of the east end of the bridge. From this point



THIS BATTERY OF PORTABLE COMPRESSORS MADE THE JOB POSSIBLE

(C) Smith & Wainwright

it constantly descends to the level of the bridge roadway. This last $\frac{3}{4}$ -mile section provided most of the difficulties, as the sides of the mountains are almost vertical and it was necessary to build retaining walls varying in height from 15 to 40 ft. These walls were built of rock blasted out of the mountainside and placed with jinniwink derricks operated by small air hoists. These were placed at various points and did



(C) Ewing Galloway

DERRICKS PERCHED IN PRECARIOUS PLACES

excellent work. They received a thorough test and proved their ability to handle the construction of masonry walls.

Compressed air was used throughout the work and of course did its full share in the drilling of the rock. Portable gasoline compressors were used because the difficult nature of the work made it impossible to install the larger steam compressors at certain points. The steam compressors were put in at each end and the smaller gasoline machines worked in between. In some cases these compressors had to be anchored to the face of the vertical rocks. As many as 60 air drills were in operation at one time operated by a battery of 12 air compressors, each having a capacity of 250 cu. ft. The rock was blasted with dynamite, steam shovels and gasoline cranes being used to handle the loose material, which was loaded into motor trucks, and in some cases in small dump cars, and deposited in the fills along the line.

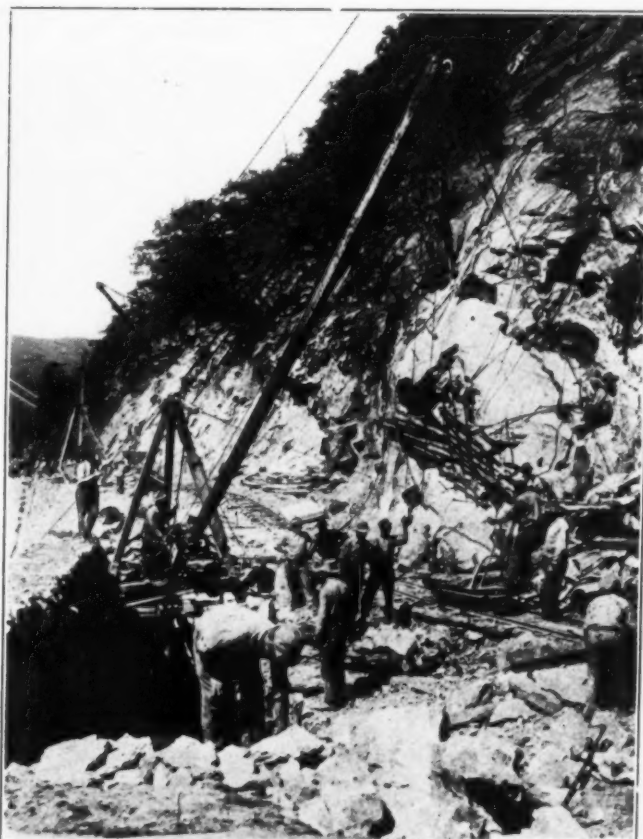
The road and some of the protecting walls are built of concrete, sand and gravel being obtained from the sand pits of the New York Tide Water Gravel Company at Roa Hook. The Rosoff Sand and Gravel Corporation supplied the sand and gravel for

the work on the west side of the river from its pits north of Newburgh.

The concrete road was laid by portable mixers, a 1:1 $\frac{1}{2}$:3 mix being used. A concrete cap was put over the masonry walls which protects the roadway where it runs directly above the railroad. In other places large boulders have been set and standard timber railings constructed. The road has been built according to the specifications of the New York State Highway Department and is 18 ft. wide with 3 ft. shoulders on each side. At various places where the views up and down the river are particularly fine the roadway has been widened so as to allow room for cars to park.

The job has presented difficulties from the very start. In order to get the plant into the work special roads had to be built over which the steam shovels, cranes and mixers were taken. All supplies had to be brought in in the same way and camps were established at several places.

Another difficulty presented itself in the summer of last year when the water supply gave out and it was necessary to suspend work for a time. This problem was solved by building a dam last spring at an elevation of 539 ft. in the valley back of Anthony's Nose. This dam impounded a lake 25 acres in extent which supplied sufficient water to the job



(C) Ewing Galloway

RETAINING WALLS WERE BUILT TO SUPPORT THE ROAD

for all purposes including drinking. This water also was carried over the tops of the bridge towers to the work on the west side of the river.

Between 600 and 700 men were employed on the construction of the road, three camps housing them.

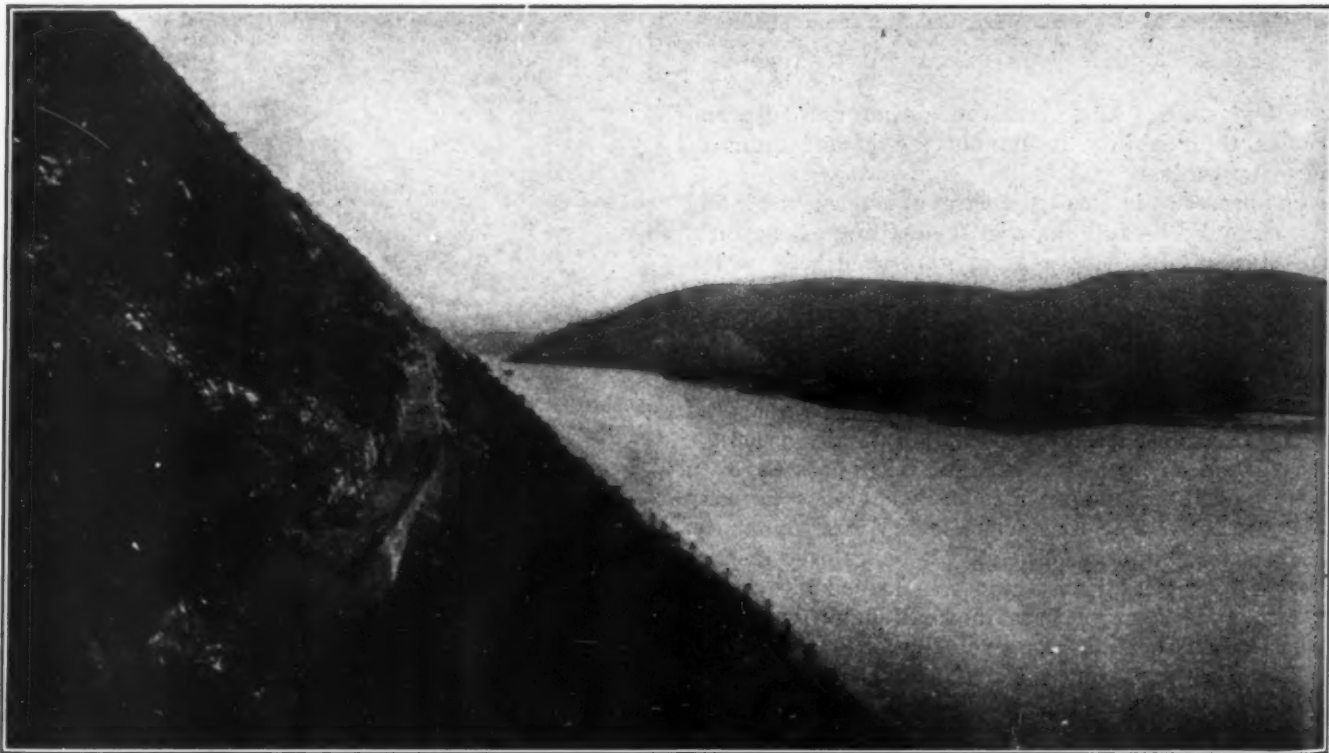


AT THE BASE OF A SECTION OF THE WALL WHICH SUPPORTS THE ROAD

The bridge consists of six spans, the center span being 1632 ft. in length or 32 ft. longer than the Williamsburg Bridge over the East River which is the longest suspension span in the world. On the west side there are four spans, 210 ft. long, 100 ft. long and two 50 ft. long, and on the east side there is one span 210 ft. long. The towers are 350 ft. in height. The cables are $18\frac{1}{4}$ in. in diameter, each one being

made up of 7252 separate wires. The concrete roadway of the bridge is 38 ft. wide with a 5-ft. sidewalk on each side. It is expected that the bridge will be finished about the first of the year and from that time on both road and bridge will be open.

The Bear Mountain Bridge Company owns the bridge and road and the contract for both was let to the Terry & Tench Co., Inc.



THE ROAD AS IT APPROACHES THE BRIDGE. THIS PHOTOGRAPH WAS TAKEN FROM THE TOP OF THE EAST TOWER

Tractors Replace Elephants



The tractor shown in the upper photograph is replacing elephants for handling timber on the banks of the Irawadda in Burma, India. © Keystone.
The lower photograph shows how the lumber formerly was transported by the elephants. © Ewing Galloway.

FRANCE BUILDS ITS FIRST BIG AUTODROME WITH AMERICAN CONSTRUCTION MACHINERY

Concrete Track Is Laid by Unusual Mixing and Chuting Plant—Stands Will Provide Unobstructed View

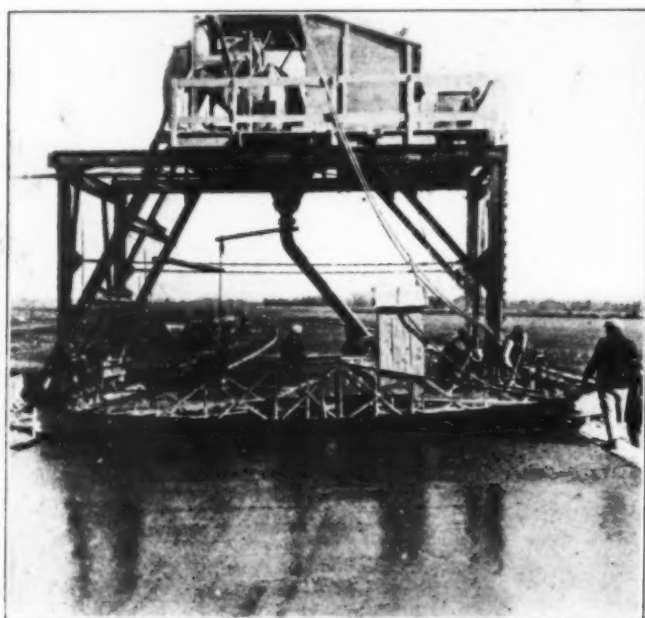
FRANCE has so long been a leader in automobile racing that the fact has been generally overlooked that it has hitherto lacked an autodrome, or automobile speedway, as it is more frequently called in this country. This deficiency is being eliminated by the construction of the Miramas autodrome on the Crau plain.

The new track is 16 meters wide and generally of elliptical shape, although it does not follow this plan exactly. Its length is 5000 meters and is banked for high speeds. On the straight sections the track has a slope of 2.75 per cent and at other points 5.5 per cent. The variations between the slope in the straight sections and those of the circular sections is distributed along the length of the junctions. Within the main track is a flat track 5 meters wide which allows damaged cars to leave the racing surface. At the outer edge of the concrete is an embankment of gravel and earth 4 meters wide which will add to the safety of those using the track.

The site selected for the autodrome is a large plain,

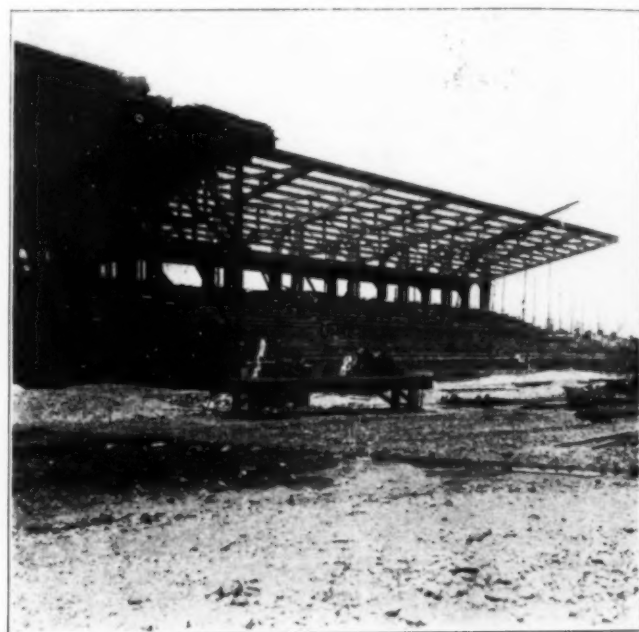
above the ground level on the straight sections and 70 ft. high on the curves.

The track itself consists of concrete 15 centimeters in thickness for the entire width of the track. The laying of this concrete has been accomplished with American machinery and, as the builders described it, by American methods, although the photographs reproduced on these pages show that the methods used



A FINISHING MACHINE WAS USED

thus reducing to a minimum the amount of excavation necessary. At no point does the ground have a slope exceeding 3 millimeters per meter. The soil is composed of a regular bed of pebbly earth resting upon what is called pudding stone, which is a sort of natural concrete. The subgrade has been laid on this foundation and consists of macadam about 10 centimeters thick carefully compacted by steam and gasoline rollers. The outside of the track is supported by a concrete wall, the top of which is 30 centimeters

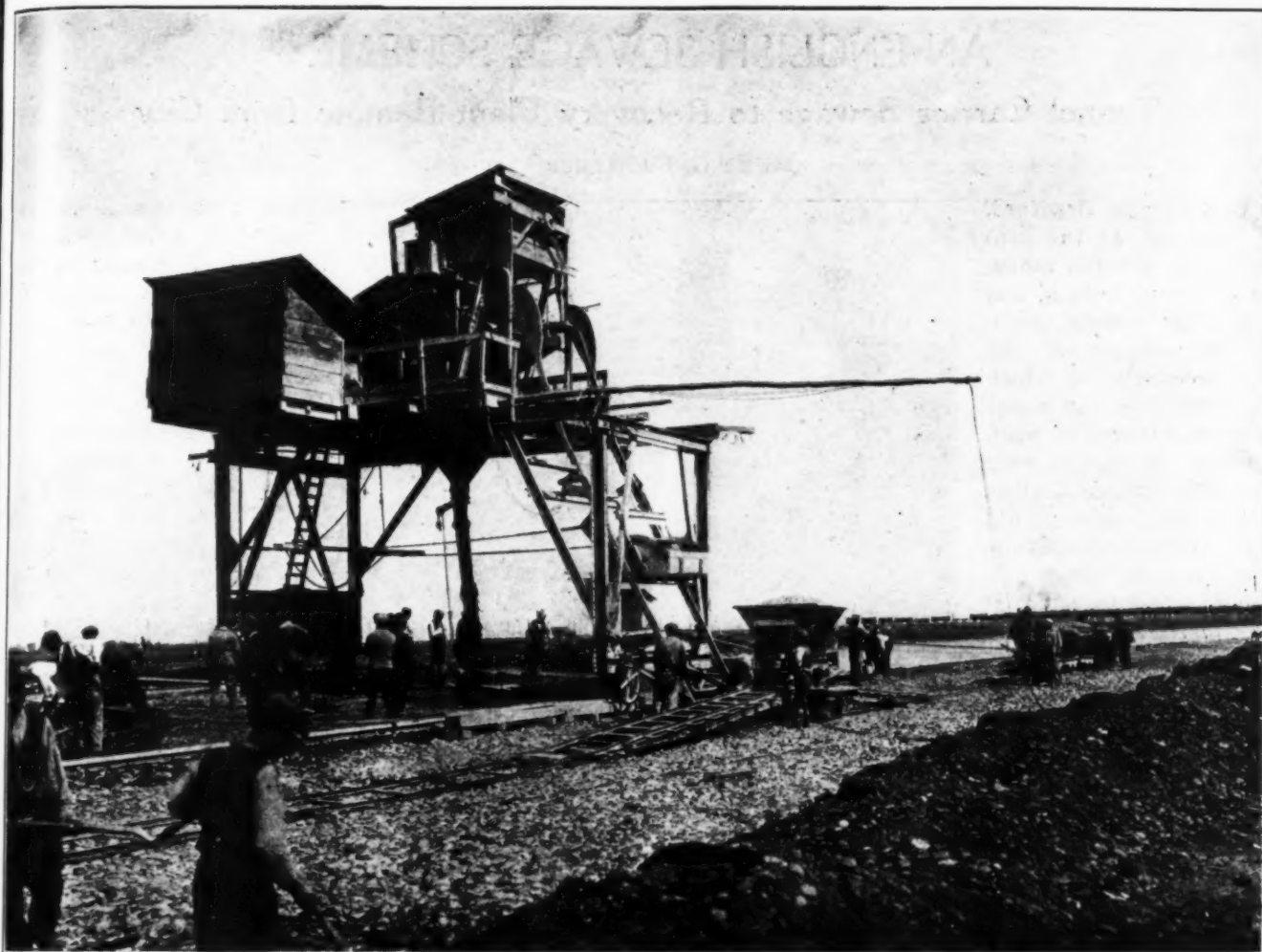


THE CONCRETE GRANDSTAND

are not exactly like those used in this country for similar work. Instead of using a paver traveling on the ground, the concrete mixer has been set on a steel framework mounted on wheels, the mixer itself being about 20 ft. above the ground. The materials are brought to the mixer by small industrial cars running on narrow-gage track and then are hauled up an inclined plane to the mixer. The details of this operation may be seen clearly in the photograph on page 13. The wet concrete is then passed through a chute, giving it a fall of about 25 ft. from the mouth of the mixer to its place on the track.

A finishing machine is then used to prepare the surface of the concrete. With this plant the 80,000 sq. meters of concrete track were completed in 3 months of actual work.

The stands, designed by M. H. Lossier, are 300 meters in length. They are built of reinforced concrete and there will be 12 rows of seats in front of the boxes. The roof frame of the stand is made of reinforced concrete and is so constructed that none of the supporting posts will interfere with the view



THE TRAVELING MIXING PLANT THAT LAID THE CONCRETE TRACK

of the track. The design of this stand may be seen in the photograph on page 12, which was taken while it was under construction.

The roof beams were constructed with the aid of a movable scaffold resting on the seats below. In addition to the construction of the track itself and the stands, a number of other buildings and several roads and paths of concrete have been built. The fence surrounding the track is 7500 meters long. Fifteen gates will be used to admit automobiles and pedes-

trians so that there will be no undue crowding on the days when big races are held.

With the completion of this track automobile racing in France will be conducted in much the same way as it has been heretofore in other countries. In the August issue of *SUCCESSFUL METHODS* the construction of an automobile track in Spain was described, and the addition of this track in France means a noteworthy development in the racing of motor cars on the other side of the Atlantic.

PROTECTING HIGHWAY FROM WAVE ACTION

California Highway Department Has to Keep Ocean Off the Road During Storms

ONE of the maintenance problems which confronts the California State Highway Department is the protection of sections of highways, which border on the Pacific, from the ocean waves. The Coast Boulevard north of Santa Monica in Los Angeles County is in constant danger from wave action during high tides and storms and in many places it was found that the waves were washing away the embankment slopes.

In order to prevent this destruction more than 2000 tons of heavy granite rip rap rock have been placed by the maintenance crews at the foot of the slopes. The rock was hauled to the nearest railroad point on

flat cars, then unloaded into motor trucks and taken to the point where it was dumped. These trucks were especially equipped at the State Highway Department's shops with a stiff leg boom, chain block and stone hooks. An inclined plane anchored to the side of the truck was used in chuting the rock over the high embankment. The trucks hauled the stone a distance of about three and one-half miles from the railroad to the places along the road where it was needed. The rock placed thus far has afforded the intended protection to the highway and has saved the State thousands of dollars in repairs.

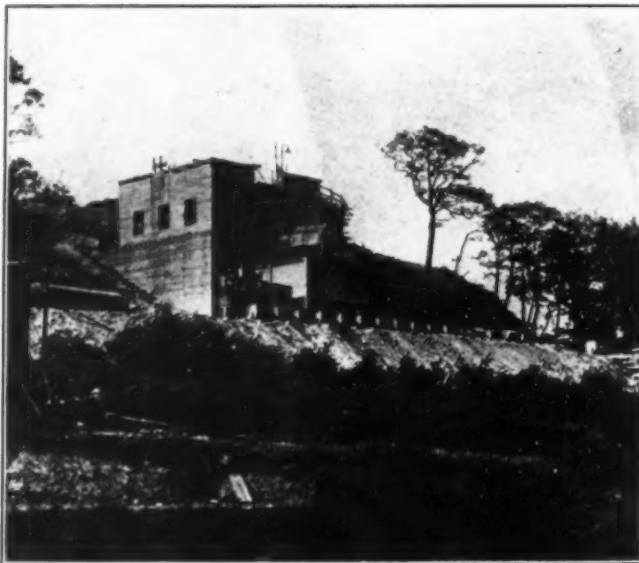
AN ENGLISH SEWAGE SCHEME

Tunnel Carries Sewage to Recovery Plant Remote from City

BY G. CROWTHER

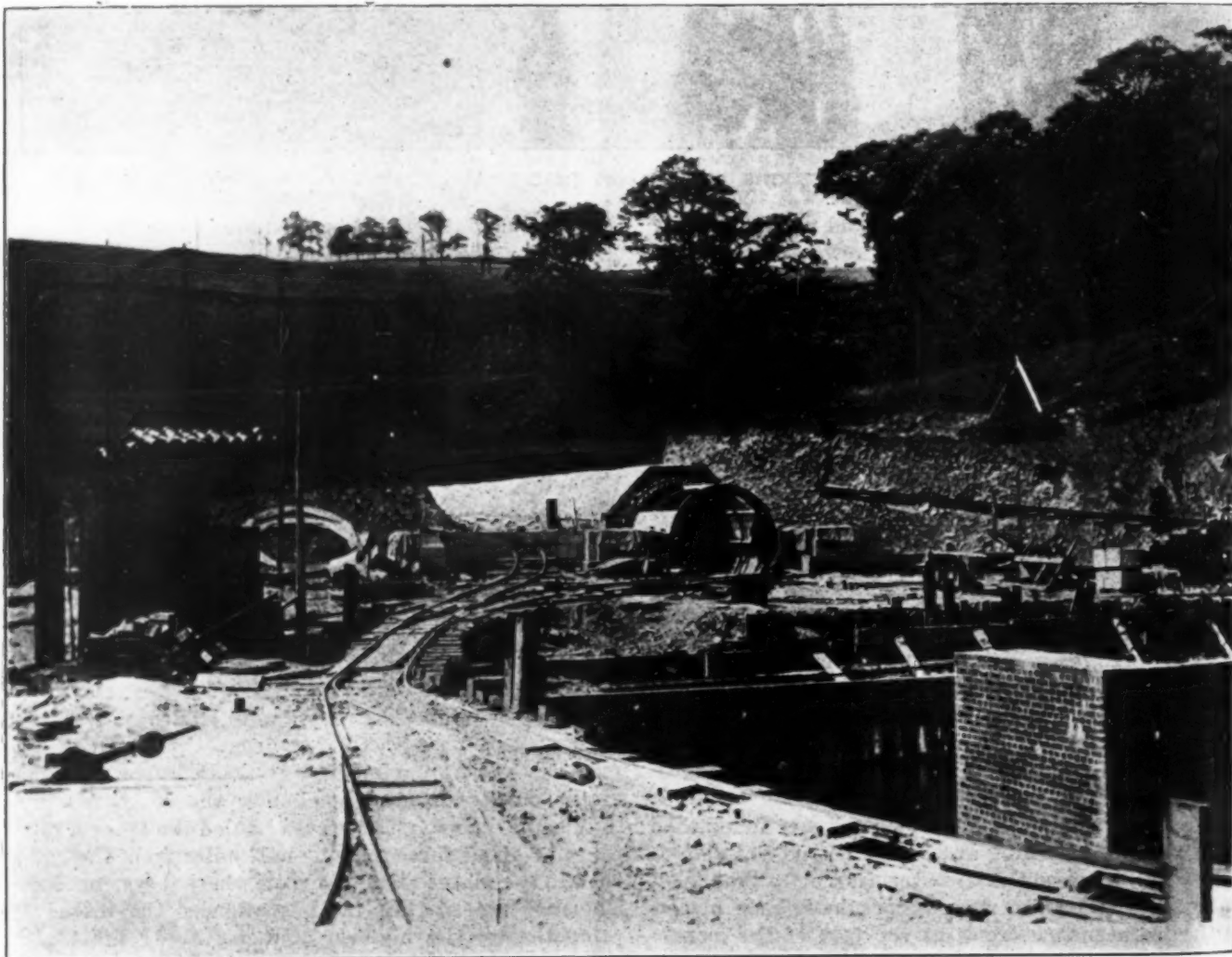
THE city of Bradford, England, as the center of the woollen industry of Great Britain, has a peculiar sewage problem on account of the large amount of fat which is turned into the water from the washing of wool. Formerly it was a very expensive matter dealing with the city's sewage, but now Bradford is one of the few cities in the world which gets a substantial revenue from the products of its sewers. The sewage is dealt with and huge quantities of fat recovered.

To facilitate the treat-



THIS SUBSTANTIAL CONCRETE STRUCTURE WAS BUILT TO HOUSE THE STONE CRUSHERS

ment of the sewage and to deal with it in the most economical manner possible new works are being erected. A site has been secured in the next valley from that in which Bradford is situated and from the Bradford valley to the one in which the new works are situated a tunnel has been dug to carry the sewage. The tunnel will be 10 ft. in diameter when completed and is lined with bricks inside a thick ring of concrete. From mouth to mouth the tunnel is $2\frac{3}{4}$ miles long and work was commenced at both ends and from a



ONE END OF THE $2\frac{3}{4}$ -MILE TUNNEL, SHOWING THE CHARACTER OF CONSTRUCTION

shaft sunk half way across the hill. This enabled work to be carried on in four directions and the workers met with dead accuracy. The work of constructing the tunnel will soon be completed, but the huge beds for dealing with the sewage and which extend for a considerable distance will not be completed for some time. The accompanying pictures show one end of the tunnel with the brick lining covered with the

lining of concrete; and the concrete building erected to house the stone crushers used for providing material for the making of concrete. The stone for the concrete is brought from the quarry to the top of the concrete building and passes down through the crushers to the concrete mixer and is filled direct into trucks, all the movement being by gravity. This method is proving both quick and economical.

BRITISH BUILDING METHODS

How They Build Scaffolds on the Other Side of the Atlantic

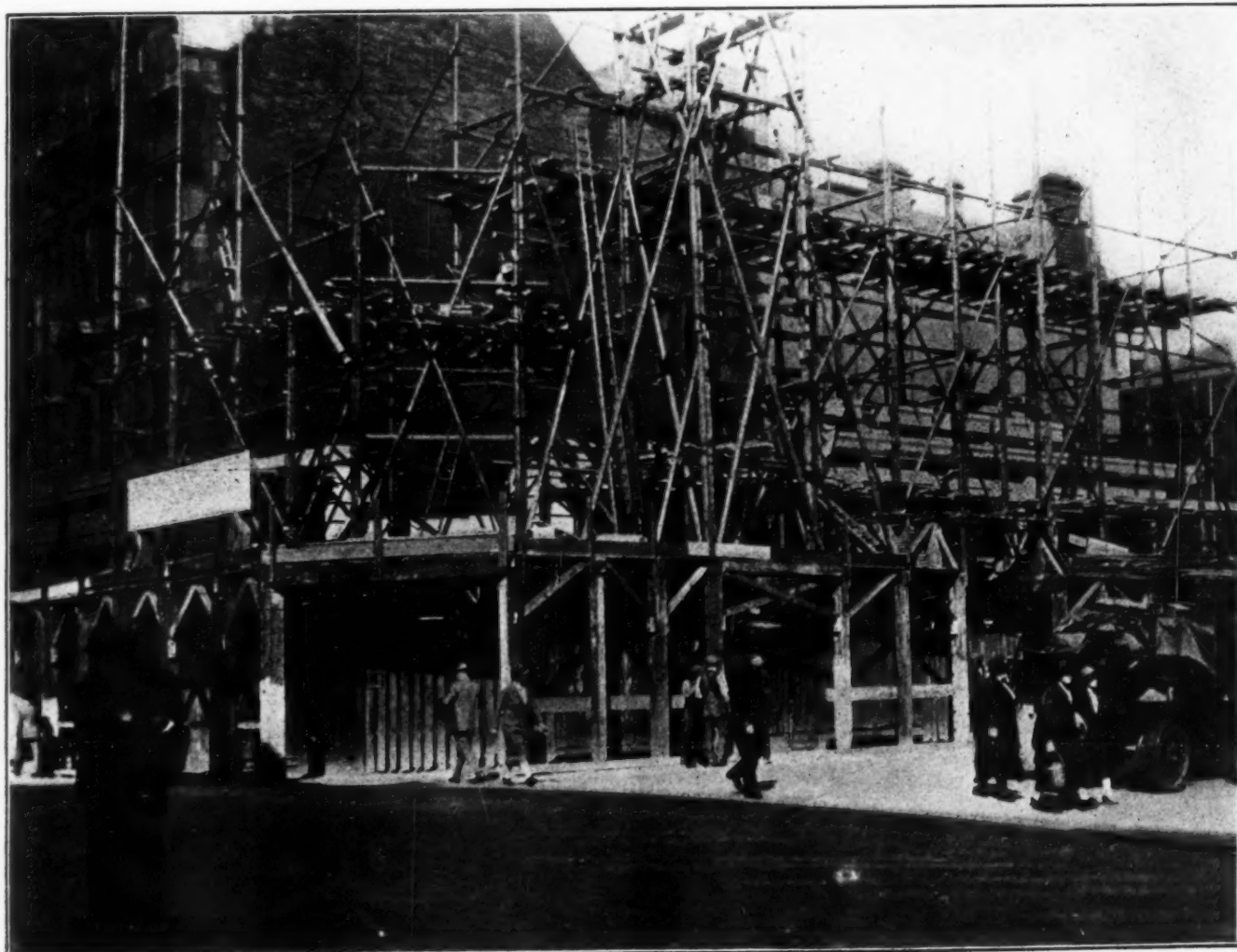
THE photograph below shows the construction of a new building for the Midland Bank of London on the principal street of Bradford, England, the city which is putting in the new sewage disposal works described in the preceding article.

This photograph is printed in SUCCESSFUL METHODS because it gives the American contractor an excellent opportunity to compare the kind of scaffolding used in England with that in use on building construction in the United States. No attempt is made here to express any opinion as to which constitutes the best

method because the readers of SUCCESSFUL METHODS, who are experts in the construction business, can judge that for themselves.

The construction of scaffolds and other temporary work is always a considerable item in the cost of any building, and it is always interesting to make comparisons of the way in which such work is carried on in other parts of the world.

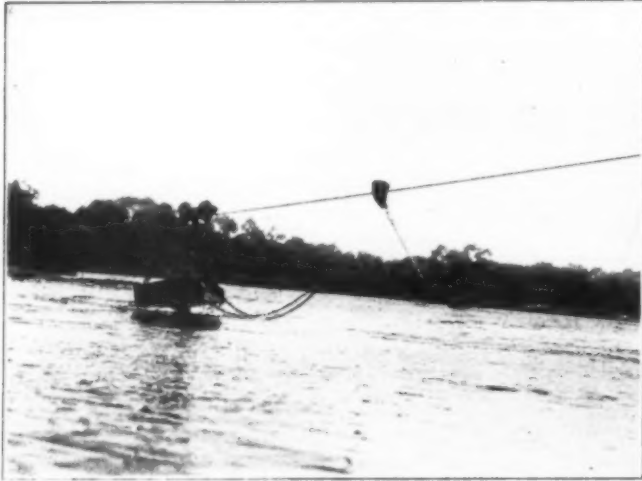
The Midland Bank of London is one of the big banks of London which maintains branch offices in some of the smaller cities of England.



A BRITISH BUILT SCAFFOLD

GETTING SAND FROM BED OF CONNECTICUT RIVER

THE Connecticut River Sand Company of Hartford gets its sand and gravel from the bed of the Connecticut River and the photographs accompanying this article show one of the methods used to obtain it.



© Ewing Galloway

THIS BUCKET GETS SAND FROM BED OF RIVER



© Ewing Galloway

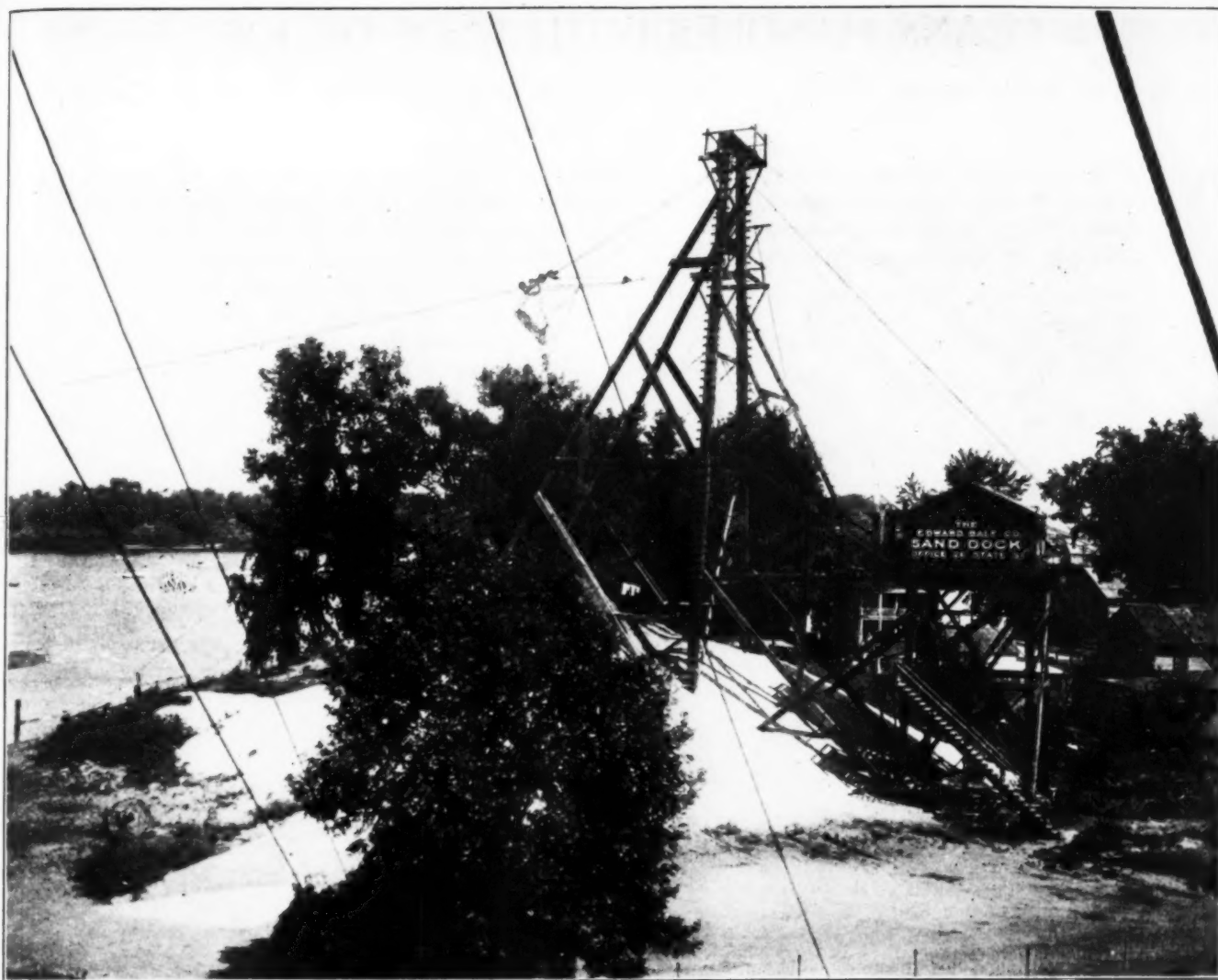
PUMPING OUT SAND

The large bucket shown on this page is suspended and run from a cable which crosses the river. The upper photograph shows the bucket just clear of the water and the large photograph at the bottom of page



© Ewing Galloway

TAKING THE PLUNGE



DUMPING THE LOAD

16 shows the bucket just as it takes the plunge from which it later emerges full of sand and gravel.

It is then pulled to the end of the cable as shown in the photograph on this page and dumped. In that photograph the bucket is discharging its load.

In addition to obtaining sand by this method the company operates a large suction pump at another point. An excellent quality of sand is obtained from the river bed and is used for construction work in Hartford and the surrounding territory.

PROTECTING THE SHOVEL OPERATOR

GREATER comfort for steam-shovel operators is made possible through the use of window sash to inclose the front of steam shovels. One ingenious Detroit contractor tried out this scheme and found that it afforded considerable protection for the operator, especially in chilly weather. Ventilation is provided by swinging sash. It is not much of a job to remove the frames when



the summer days come round.

The accompanying photograph shows the shovel with two sections of sash opened. The operator's view of the boom and dipper are unobstructed, and he gets protection that does not ordinarily go with such a job. Needless to say the operator likes his de luxe shovel, especially when the chilly fall and winter days make outside work uncomfortable.

CRANE HANDLES BOTH ENDS OF JOB

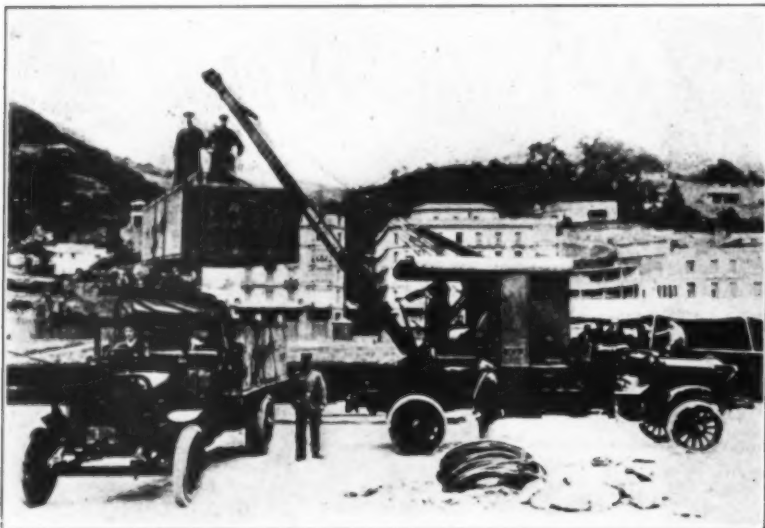
Loads Automobiles on Trucks at Waterfront and Unloads Them at Door of City Show Rooms

THE operations shown in the photographs on this page are being conducted in Barcelona, Spain, by the Compania de Transporte y Automovils Viscaya. This company has purchased a gasoline crane built in

makes the agents of the American automobile companies independent of the usual loading facilities at the port and handles the big boxes in front of their city offices with much more speed than would be possible if the trucks were unloaded by hand. This means, of course, that the street is not blocked for a long time, as would be the case if the trucks had to back up to the curb and remain there while the tedious process of unloading is completed. Each truck is also able to carry two boxed automobiles, which would be impossible if they had to be unloaded by the old method.

The president of the Compania de Transporte y Automovils Viscaya is the Count of Vilallonga. The company maintains other offices at Bilboa.

The whole operation is an excellent example of the time and labor-saving capabilities of machines like this crane. The time required to get the boxed cars from pier to store is greatly reduced, and the number of

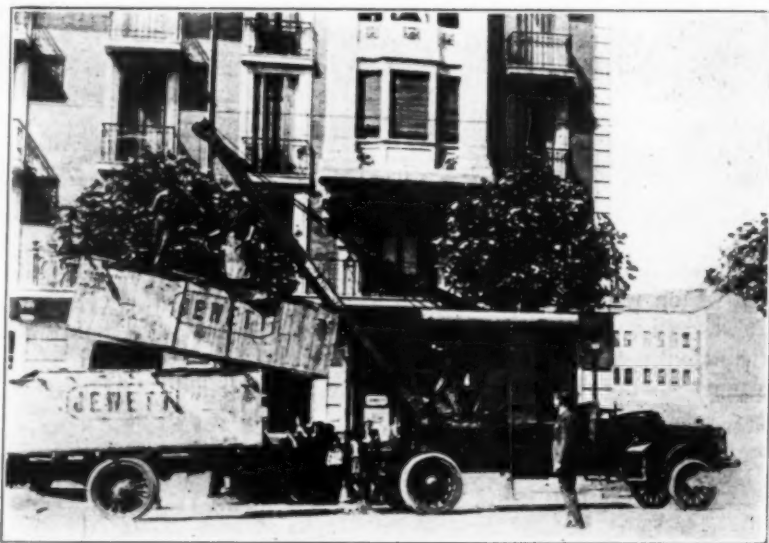


LOADING AT THE PORT

the United States and mounted it on an old U. S. Army motor truck which was left on the other side at the conclusion of the war. It has been used for various sorts of work, but its chief duty at present is the transportation of American automobiles.

The upper photograph shows the crane at work at the port where the boxed automobiles are unloaded. It picks them up, loads them on motor trucks and follows along under its own power until it reaches the unloading point at Barcelona or elsewhere. Then it backs into position and unloads the trucks, placing the big boxes on the sidewalk on rollers so that they may easily be rolled indoors.

The ability of this crane to handle both ends of the job and to keep pace with the truck carrying the load so that there will be no delay at either end makes it an extremely useful piece of equipment for different sorts of work. It



UNLOADING AT STORE DOOR

men needed to handle the awkward and heavy boxes is cut to a minimum.

MINNESOTA PROVES WORTH OF GRAVEL ROADS

MINNESOTA'S gravel roads have proved conclusively that in rather sparsely settled country a road of that character when properly maintained can carry the traffic. The photograph on the opposite page shows a typical gravel road in the north central part of the State. These roads are patrolled by maintenance men, each of whom has a section about 6 miles in length. They are kept in excellent condition

and the expense of maintaining them, although of course higher than in the case of a concrete road, is not great.

The gravel for surfacing these roads is always obtainable close at hand, thus cutting down the initial expense of building the roads. Minnesota has thousands of miles of highways of this type and they are proving their worth every month in the year.

A Minnesota Gravel Road



These roads stand up under heavy bus traffic

WAGONS STAND HEAVY STRAIN

Do Work of Dump Cars in Handling Rock on Railway Job Near Pittsburgh

By C. P. BURTON

EQUIPMENT that can handle harder work than it is designed for is always an asset to any contractor. The Ferguson & Edmonson Company of Pittsburgh found this out recently on some work which it is doing on the Montour Railroad not far from Pittsburgh.

The work to be done included a rock cut 400 ft. long and 55 ft. deep, containing about 40,000 cu. yd. of solid rock. Ordinarily this would be work for dump cars, and heavy dump cars at that, and as a matter of fact 4-yd. dump cars later were installed for handling this rock. At the beginning of the work, however, the unfinished condition of two bridges across the Montour River made it impossible to use cars and it was decided to try out dump wagons as a substitute. The photographs show better than any description can the character of the rock handled. When blasted it broke up into huge slabs, some of which were too large to go into the wagons at all and had to be broken up again. The rock was picked up by a steam shovel, dropped into the wagons with the usual gentleness with which a steam shovel transfers its load to the next carrier, and then hauled in the wagons to a fill.

The material was so coarse that there was not enough fine material to fill the spaces between the stones, which made the going extremely difficult for the wagons. In addition the loaded wagons had to get down a 40 per cent grade, a feat which was accomplished by locking both rear wheels.

Notwithstanding these unusual and difficult conditions the wagons handled the rock and at the rate of 376 to 385 wagon loads daily. The Montour Railroad is a coal carrying line owned by the Pittsburgh Coal Company and the work just described is being undertaken in order

to straighten and otherwise improve the railroad. The Ferguson & Edmonson Company has done much of this work.

When this particular section had been finished, the contractors stated that it was the most difficult rock work that they had ever encountered in their long career in the construction field. The moving of a great quantity of rock is always a difficult proposition and in this case the problem was, of course, complicated by the necessity of using equipment meant for lighter work. That the wagons stood the strain not only of carrying the rock but of making their way over



A REAL LOAD FOR A WAGON



READY TO DROP A BIG ONE INTO THE LONG-SUFFERING WAGON



THE ROCK FILL LOOKED LIKE THIS

the rough fill is a remarkable tribute to their sturdiness. Only good, sound construction in every part enabled them to get away with it.

On this particular job 1400 ft. in distance will be saved in 5000 ft. and 360 deg. of curvature will be eliminated.

PENNSYLVANIA TO PLANT VINES AND FLOWERS ALONG STATE HIGHWAYS

PENNSYLVANIA, always a leader in the highway field, is working out a comprehensive program for planting trees, flowers and shrubs along the State roads. During the last few weeks the officials of the highway department have been in consultation with the Departments of Agriculture and Forests and Waters, the Game Commission, Bureau of Municipalities and the State Botanist in regard to this work. Paul D. Wright, Secretary of Highways, and William H. Connell, Engineering Executive, are both anxious to speed up the planting program so that visitors driving over the Pennsylvania roads will not be continually reminded of the grading and other such work necessary in road building.

The highway department in instructions to engineers has notified them that they may make requisition for vines and other growths they deem necessary. The State will require approximately 300,000 vines. These will include wild roses, rambler and creeper roses; the matrimony vine, which in spring has a yellow blossom; the kutzu vine, which bears a colorful berry; bush honeysuckle, the blossoms of which range from white to red; the yellow forsythea; shrub dogwood, which has white and pink blossoms; spirea, with its white blossoms; the snow berry, the Japanese

barberry and the liberty iris, which has a lavender blossom.

But the colors will not be confined to the vines the department will plant. The engineers are making selections from ten grasses—including white clover, the pink alsike clover, the blue hairy vetch, the purple alfalfa and yellow vaccaria. These grasses will be used for slope planting in conjunction with orchard grass, meadow fescue, tall meadow oat grass, Canada blue grass and perennial rye grass. In planting on the berms or shoulders of the roads the department will use Kentucky blue grass, red top, red fescue, alsike clover, perennial rye grass and white clover.

"At comparatively small cost Pennsylvania highways can be given a parkway resemblance," said William H. Connell. "There is no reason why the State's many marvelous miles of scenic splendors should be marred by unsightly cuts or fills and naked shoulders."

This recognition of the fact that the building of a highway defaces the landscape in a way that if left to itself will last for years, is something that is too often overlooked. Pennsylvania is pointing the way to the other states in a matter that ought to have had more attention in the past than it has received.

A. R. B. A. CONVENTION AND ROAD SHOW PLANS

THERE is every indication that the annual convention and road show of the American Road Builders' Association to be held in Chicago Jan. 5 to 9, inclusive, will surpass all of its predecessors. As has been stated by C. M. Upham, Business Director of the Association, the company owning the Coliseum has put up a new building which will increase the space at the show. Manufacturers of road construction and maintenance machinery from all over the country will be represented and the increase in exhibition space will make it possible for a number of manufacturers to have exhibits who were not able to get in at the 1924 show.

The Program Committee under the direction of

Prof. T. R. Agg is preparing a program that will insure thorough discussion of a number of problems which confront road builders at the present time. These discussions will present all sides of the questions taken up.

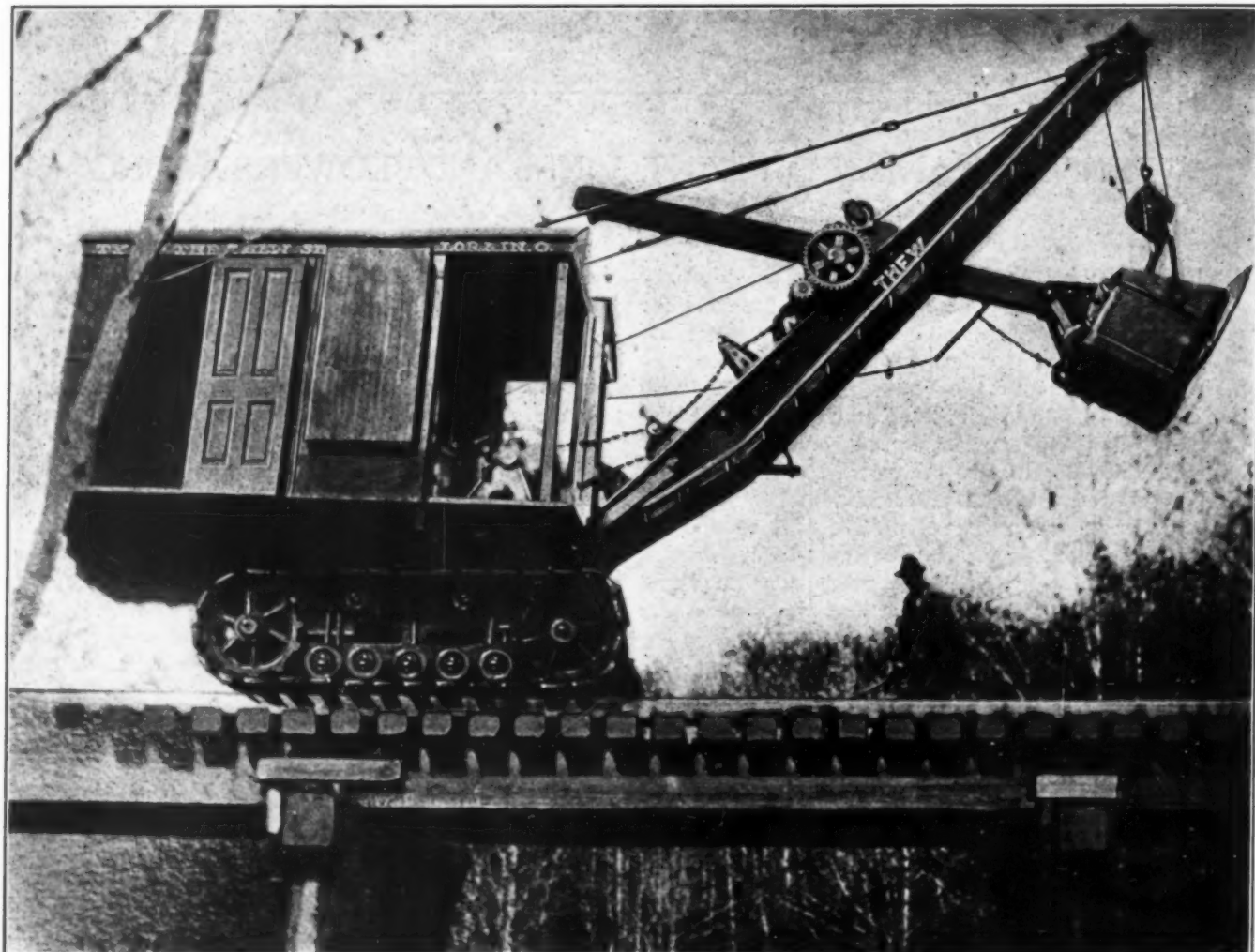
Every contractor engaged in highway construction should attend the 1925 convention and road show. The date is set purposely at a time when actual road construction is at a standstill in all parts of the country except the South. An equal opportunity is provided to obtain a thorough knowledge of the equipment used in road work as well as a chance to find out how the other fellow is solving the problems which every contractor finds in his own work.

SHOVEL CROSSES TRESTLE SAFELY

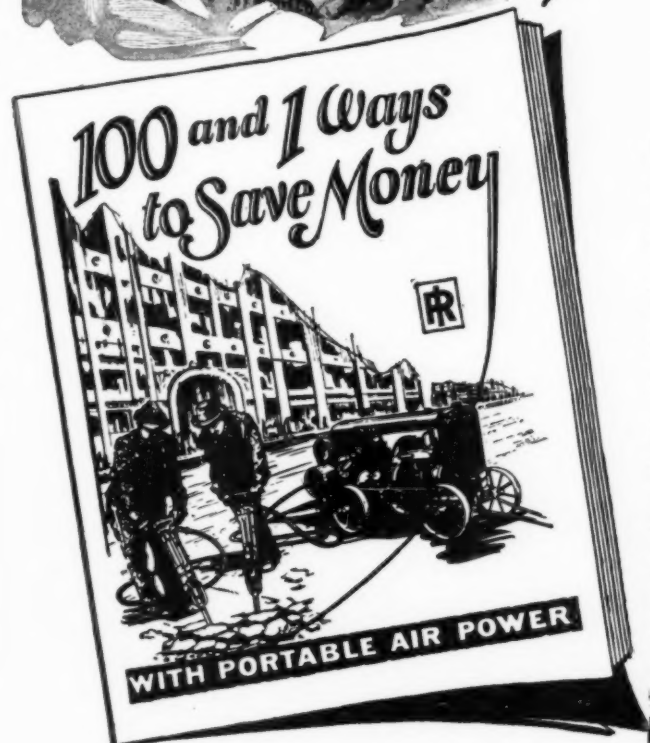
GETTING construction equipment to the job is often one of the hardest problems which a contractor faces, especially when a heavy machine like a power shovel has to be used. The photograph shows how a problem of this kind was solved by the Astoria Crushed Rock Company of Cathlamet, Wis., where a gasoline shovel was needed for work on the extension

of a logging railroad which could be reached only by crossing a one-track trestle which was so narrow that the treads of the shovel projected over the side.

The operator of the shovel looked the trestle over, made sure that it was strong enough to carry the load and then started to cross. He moved right along as though he were traveling on an ordinary road.



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